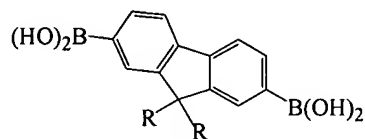


WHAT IS CLAIMED IS:

1. A process for preparing an end-functionalized conjugated oligomer of a polyarylene comprising the steps of:

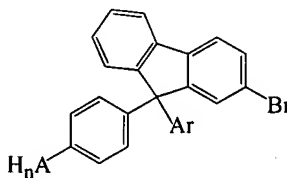
- a) effecting a reaction between a compound comprising a phenol, thiol or amine functional moiety which is substituted with an aryl halide or aryl boronic acid or ester, and a compound selected from a bis-boronic acid or ester or a bis-haloarene to form an oligomer;
- b) isolation and purification of the oligomer.

2. The process of claim 1 wherein the phenol, thiol or amine functional moiety is reacted with a compound having the formula:



wherein each R is selected from the same or different moiety selected from straight or branched alkyl, substitute alkyl, aryl or substituted aryl radicals.

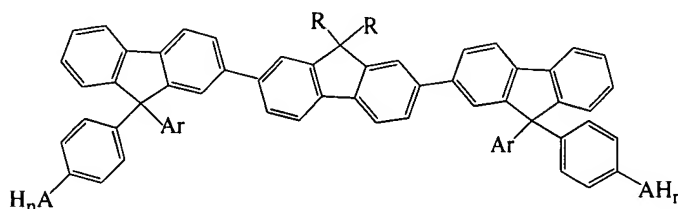
3. The process of claim 1 wherein the phenol, thiol or amine functional moiety is a compound of the formula:



wherein Ar is an aromatic moiety, A is O, S or N and n is 1 or 2.

4. The process of claim 3 wherein the Ar aromatic moiety is selected from phenyl, substituted phenyl, naphthyl, substituted naphthyl, anthryl, substituted anthryl biphenylyl, and substituted biphenylyl.

5. The process of claim 2 wherein the resulting oligomer has the formula:



wherein Ar is an aromatic moiety, A is O, S or N, $n = 1$ or 2 and each R is selected from the same or different moiety selected from straight or branched alkyl, substituted, straight or branched alkyl, aryl or substituted aryl.

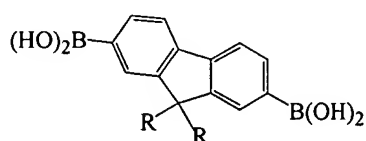
6. The process of claim 5 wherein the Ar aromatic moiety is selected from phenyl, substituted phenyl, naphthyl, substituted naphthyl, anthryl, substituted anthryl biphenylyl, and substituted biphenylyl.

7. A process for forming a polymer comprising a series of end functionalized conjugated oligomers of a polyarylene comprising the steps of:

- a) effecting a reaction between a compound comprising a phenol, thiol or amine functional moiety which is substituted with an aryl halide or aryl boronic acid or ester, and a compound selected from a bis-boronic acid or ester or a bis-haloarene to form an oligomer having an amine thio or amine functional moiety formed thereon;

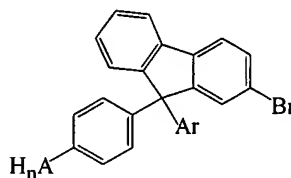
- b) isolation and purification of the oligomer having an amine thio or amine functional moiety formed thereon; and
- c) reacting the phenol, thiol or amine functional moiety present on the oligomer of step b) with a difunctional monomer to form a polymer.

8. The process of claim 7 wherein the phenol, thiol or amine functional moiety on the compound of step a) is reacted with a compound having the formula:



wherein each R is selected from the same or different moiety selected from straight or branched alkyl, substitute alkyl, aryl or substituted aryl radicals.

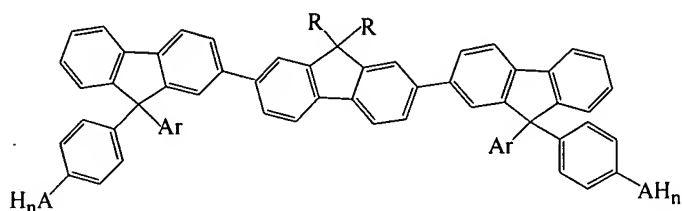
9. The process of claim 7 wherein the compound comprising a phenol, thiol or amine functional moiety in step a) is a compound of the formula:



wherein Ar is an aromatic moiety, A is O, S or N and n is 1 or 2.

10. The process of claim 9 wherein the Ar aromatic moiety is selected from phenyl, substituted phenyl, naphthyl, substituted naphthyl, anthryl, substituted anthryl biphenyl, and substituted biphenyl.

11. The process of claim 9 wherein the resulting oligomer has the formula:



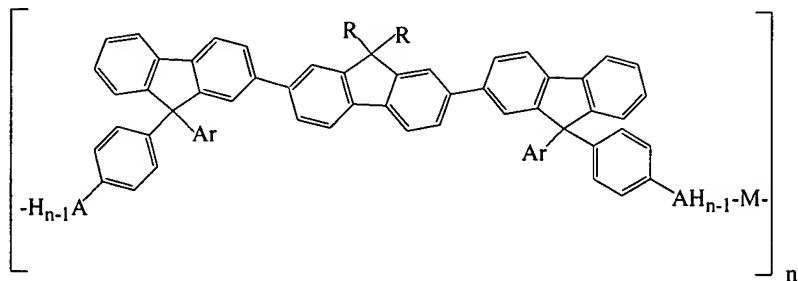
wherein Ar is an aromatic moiety, A is O, S or N, $n = 1$ or 2 and each R is selected from the same or different moiety selected from straight or branched alkyl, substituted, straight or branched alkyl, aryl or substituted aryl.

12. The process of claim 11 wherein the Ar aromatic moiety is selected from phenyl, substituted phenyl, naphthyl, substituted naphthyl, anthryl, substituted anthryl biphenylyl, and substituted biphenylyl.

13. The process of claim 12 wherein Ar is selected from 4-t-butylphenyl.

14. The process of claim 7 wherein the difunctional monomer is a compound selected from BPA-bis-chloroformate, terephthalic acid, terephthalic diacid chloride, dichlorophenylsulfoné, pyromellitic dianhydride, adipoylchloride, diphenyldichlorosilane, dimethyldichlorosilane, phosgene, 1,1,3,3-tetramethyldisiloxane and mixtures thereof.

15. The process of claim 5 wherein the oligomer of claim 5 is further polymerized with a difunctional monomer having the formula MX_2 to form a polymeric compound having the formula:



where MX_2 is a difunctional monomer which is capable of reacting with the AH_n group to form a polymer.

16. The process of claim 15 wherein the MX_2 difunctional monomer is a compound selected from BPA-bis-chloroformate, terephthalic acid, terephthalic diacid chloride, dichlorophenylsulfone, pyromellitic dianhydride, adipolychloride, diphenyldichlorosilane, dimethyldichlorosilane, phosgene, 1,1,3,3-tetramethyldisiloxane, and mixtures thereof.

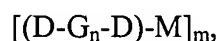
17. An end-functionalized oligomer produced by the process of claim 1.

18. A polymer prepared by the process of claim 7.

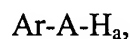
19. A light emitting device comprising an active layer, wherein said active layer is formed from a polymer produced in accordance with the process of claim 7.

20. A photovoltaic device comprising an active layer, wherein said active layer is formed from a polymer produced in accordance with the process of claim 7.

21. A polymer composition comprising a polymer of the general formula:



wherein D is an "A-functional" segment of the general formula:



wherein Ar is an aromatic unit, A is selected from the group consisting of O, N, and S, and a is an integer between about 1 and 3; G is an oligophenylene; n is an integer between about 1 and 25, M is a linking group, and m is an integer between about 1 and 1000.

22. The composition of claim 21 wherein said aromatic unit is selected from the group consisting of phenyl, substituted phenyl, naphthyl, anthryl, biphenyl, substituted variants thereof, and mixtures thereof.

23. The composition of claim 21 wherein said M is formed by reacting at least one MX_2 with the (D- G_n -D) segments.

24. The composition of claim 23 wherein said MX_2 is selected from the group consisting of BPA-bis-chloroformate, terephthalic acid and its diacid chloride, dichlorophenylsulfone, pyromellitic dianhydride, adipochloride, diphenyldichlorosilane, dimethyldichlorosilane, 1,1,3,3-tetramethyldisiloxane, phosgene, and mixtures thereof.